

Application Serial No. 09/694,675
Amendment dated March 19, 2004
Reply to Office action of January 2, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Amended currently) A wireless terminal device for selectively receiving a desired channel from a plurality of channels, comprising:

an antenna for receiving a radio-frequency signal including said plurality of channels;

a local oscillator for oscillating a local oscillation signal;

a first mixer of a differential type for mixing the radio-frequency signal sent from said antenna with the local oscillation signal sent from said local oscillator to produce a first base band signal and a second base band signal having a phase differing by 180 degrees from that of said first base band signal;

a first low-pass filter of the differential type and a passive type for receiving said first and second base band signals from said first mixer; and

a base band circuit for receiving said first and second base band signals passed through said first low-pass filter;

wherein said first low-pass filter includes:

a first inductor for passing and transmitting said first base band signal sent from said first mixer to said base band circuit;

a second inductor for passing and transmitting said second base band signal sent from said first mixer to said base band circuit; and

a capacitor coupled between said first and second inductors.

2. (Cancelled)

6. ~~3.~~ (Amended currently) A The wireless terminal device for selectively receiving a desired channel from a plurality of channels, comprising: according to claim 1;

an antenna for receiving a radio-frequency signal including said plurality of channels;

a local oscillator for oscillating a local oscillation signal;

a first mixer of a differential type for mixing the radio-frequency signal sent from said antenna with the local oscillation signal sent from said local oscillator to produce a first base

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band signal and a second base band signal having a phase differing by 180 degrees from that of said first base band signal;

a first low-pass filter of the differential type and a passive type for receiving said first and second base band signals from said first mixer; and

a base band circuit for receiving said first and second base band signals passed through said first low-pass filter wherein

said first low-pass filter has a cut-off frequency lower than a channel next to a channel neighboring to said desired channel.

7. ⁶4. The wireless terminal device according to claim 3, wherein said base band circuit includes:

an active low-pass filter for receiving said first and second base band signals passed through said first low-pass filter, and having a cut-off frequency lower than the channel neighboring to said desired channel.

a) 11. ~~5~~ (Amended currently) ~~A The~~ wireless terminal device for selectively receiving a desired channel from a plurality of channels, comprising: according to claim 1,

an antenna for receiving a radio-frequency signal including said plurality of channels;

a local oscillator for oscillating a local oscillation signal;

a first mixer of a differential type for mixing the radio-frequency signal sent from said antenna with the local oscillation signal sent from said local oscillator to produce a first base band signal and a second base band signal having a phase differing by 180 degrees from that of said first base band signal;

a first low-pass filter of the differential type and a passive type for receiving said first and second base band signals from said first mixer; and

a base band circuit for receiving said first and second base band signals passed through said first low-pass filter wherein

said base band circuit can operate with only a positive power supply.

3. ~~6~~ (Original) The wireless terminal device according to claim 1, further comprising:

a phase shifter for producing first and second radio-frequency signals having phases differing by 90 degrees from each other in response to the radio-frequency signal sent from said antenna, and applying said first radio-frequency signal to said first mixer;

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a second mixer of the differential type for mixing the second radio- frequency signal sent from said phase shifter with the local oscillation signal sent from said local oscillator to produce a third base band signal and a fourth base band signal having a phase differing by 180 degrees from that of said third base band signal; and

a second low-pass filter of the differential type and the passive type for receiving said third and fourth base band signals from said second mixer.

4. ~~7~~. (Original) The wireless terminal device according to claim ~~6~~³, wherein said first and second low-pass filters are formed of a single element.

5. ~~8~~. (Original) The wireless terminal device according to claim ~~6~~³, wherein each of said first and second mixers is an even harmonic mixer.

6. ~~9~~. (Original) The wireless terminal device according to claim 1, wherein said first mixer is an even harmonic mixer.

a1 15. ~~10~~. (Original) A wireless terminal device for selectively receiving a desired channel from a plurality of channels, comprising:

an antenna for receiving a radio-frequency signal including said plurality of channels;

a local oscillator for oscillating a local oscillation signal;

a first mixer of a differential type for mixing the radio-frequency signal sent from said antenna with the local oscillation signal sent from said local oscillator to produce a first base band signal and a second base band signal having a phase differing by 180 degrees from that of said first base band signal;

a first low-pass filter of the differential type and a passive type for receiving the first and second base band signals from said first mixer;

a second low-pass filter of the passive type for receiving the first and second base band signals passed through said first low-pass filter, and

having a cut-off frequency higher than a cut-off frequency of said first low- pass filter; and

a base band circuit for receiving said first and second base band signals passed through said second low-pass filter.

16. ~~11~~. (Original) The wireless terminal device according to claim ~~10~~¹⁵, wherein said second low-pass filter includes:

a first inductor for passing and transmitting said first base band signal sent from said first low-pass filter to said base band circuit;

a second inductor for passing and transmitting said second base band signal sent from said first low-pass filter to said base band circuit; and

a capacitor coupled between said first and second inductors.

17. ¹⁵~~12~~. (Original) The wireless terminal device according to claim ¹⁵~~10~~, wherein said second low-pass filter includes:

a first resistance element for passing and transmitting the first base band signal sent from said first low-pass filter to said base band circuit;

a second resistance element for passing and transmitting the second base band signal sent from said first low-pass filter to said base band circuit; and

a capacitor coupled between said first and second resistance elements.

a1 21. ¹⁵~~13~~. (Original) The wireless terminal device according to claim ¹⁵~~10~~, wherein said first low-pass filter has the cut-off frequency lower than a channel next to a channel neighboring to said desired channel.

22 22. ²¹~~14~~. (Original) The wireless terminal device according to claim ²¹~~13~~, wherein said base band circuit includes:

an active low-pass filter for receiving said first and second base band signals passed through said first and second low-pass filters, and having a cut-off frequency lower than the channel neighboring to said desired channel.

23 23. ²²~~15~~. (Original) The wireless terminal device according to claim ²²~~14~~, wherein said second low-pass filter includes:

a first resistance element for passing and transmitting the first base band signal sent from said first low-pass filter to said base band circuit;

a second resistance element for passing and transmitting the second base band signal sent from said first low-pass filter to said base band circuit; and

a capacitor coupled between said first and second resistance elements; and

said second low-pass filter is integrated with at least said active low-pass filter on a common semiconductor substrate.

24 24. ²¹~~16~~. (Original) The wireless terminal device according to claim ²¹~~13~~, wherein the cut-off

frequency of said second low-pass filter is set in accordance with deterioration of attenuation characteristics in a high frequency range of said first low-pass filter.

25. ~~17~~²⁴ (Original) The wireless terminal device according to claim ~~16~~¹⁶, wherein the cut-off frequency of said second low-pass filter is at least 80 MHZ.

19. ~~18~~¹⁵ (Original) The wireless terminal device according to claim ~~10~~¹⁰, further comprising:

a phase shifter for producing first and second radio-frequency signals having phases differing by 90 degrees from each other in response to the radio-frequency signal sent from said antenna, and applying said first radio-frequency signal to said first mixer;

a second mixer of the differential type for mixing the second radio-frequency signal sent from said phase shifter with the local oscillation signal sent from said local oscillator to produce a third base band signal

a1 and a fourth base band signal having a phase differing by 180 degrees from that of said third base band signal;

a third low-pass filter of the passive type for receiving said third and fourth base band signals from said second mixer; and

a fourth low-pass filter of the passive type for receiving the third and ~~15~~¹⁵ fourth base band signals passed through said third low-pass filter, and

having a cut-off frequency higher than a cut-off frequency of said third low-pass filter.

20. ~~19~~¹⁹ (Original) The wireless terminal device according to claim ~~18~~¹⁸, wherein each of said first and second mixers is an even harmonic mixer.

18. ~~17~~¹⁵ (Original) The wireless terminal device according to claim ~~10~~¹⁰, wherein said first mixer is an even harmonic mixer.

9. ~~16~~⁶ (New) The wireless terminal device according to claim ~~8~~⁸, further comprising:

a phase shifter for producing first and second radio-frequency signals having phases differing by 90 degrees from each other in response to the radio-frequency signal sent from said antenna, and applying said first radio-frequency signal to said first mixer;

a second mixer of the differential type for mixing the second radio-frequency signal sent from said phase shifter with the local oscillation signal sent from said local oscillator to produce a third base band signal and a fourth base band signal having a phase differing by 180 degrees from that of said third base band signal; and

a second low-pass filter of the differential type and the passive type for receiving said third and fourth base band signals from said second mixer.

10. ~~22~~⁹. (New) The wireless terminal device according to claim ~~21~~⁹, wherein each of said first and second mixers is an even harmonic mixer.

8. ~~23~~⁶. (New) The wireless terminal device according to claim ~~3~~⁶, wherein said first mixer is an even harmonic mixer.

13. ~~24~~¹¹. (New) The wireless terminal device according to claim ~~5~~¹¹, further comprising:

a phase shifter for producing first and second radio-frequency signals having phases differing by 90 degrees from each other in response to the radio-frequency signal sent from said antenna, and applying said first radio-frequency signal to said first mixer;

a second mixer of the differential type for mixing the second radio- frequency signal sent from said phase shifter with the local oscillation signal sent from said local oscillator to produce a third base band signal and a fourth base band signal having a phase differing by 180 degrees from that of said third base band signal; and

a second low-pass filter of the differential type and the passive type for receiving said third and fourth base band signals from said second mixer.

14. ~~25~~¹³. (New) The wireless terminal device according to claim ~~24~~¹³, wherein each of said first and second mixers is an even harmonic mixer.

17. ~~26~~¹¹. (New) The wireless terminal device according to claim ~~5~~¹¹, wherein said first mixer is an even harmonic mixer.
